SCOPE OF WORK CONTRACT W912EF-07-D-0003 TASK ORDER NO. 0005 July 6, 2009

PREDESIGN AND FEASIBILITY STUDY TO ACHIEVE NPDES COMPLIANCE FOR THE

DWORSHAK FISH HATCHERY

1. BACKGROUND AND PURPOSE

Purpose

The purpose of this task order is for the AE to prepare a predesign and feasibility study that will ultimately lead to the Dworshak Fish Hatchery achieving compliance with its National Pollutant Discharge Elimination System (NPDES) permit.

Background

This Project is divided into separate task orders. Task Order #4 is a site visit and Task Order #5 is the conceptual design of the hatchery to comply with the NPDES permit. The Dworshak Fish Hatchery located near Orofino, Idaho is owned by the Walla Walla District, U.S. Army Corps of Engineers (COE) and co-managed by the U.S. Fish and Wildlife Service (FWS) and the Nez Perce Tribe. The hatchery raises approximately 2.0 million steelhead smolts annually to release in the Clearwater River as part of the COE Dworshak Dam mitigation program. The hatchery also participates in the Lower Snake River Compensation Plan, raising approximately 1.0 million Chinook salmon smolts for the North Fork River each year. Additionally, 280,000 Coho salmon smolts are raised as part of a cooperative program with the Nez Perce Tribe and 15,000 rainbow trout are raised for outreach activities.

The Dworshak Fish Hatchery has a total of 84 concrete Burrows Ponds arranged into three different systems. Each system has the infrastructure and equipment for operation under water reuse configuration. The Burrows Ponds in System I were constructed for reuse during the initial hatchery construction and reuse equipment was added in System II and III during the second phase of construction. In system I and II, Burrows pond effluent is collected in one of two concrete effluent drain channels that run perpendicular to the ponds, one channel drains directly to the river and the other transfers pond effluent to the corresponding system's reuse treatment equipment. System III effluent can be directed to either the system's channel pump sump for reuse operation or to the River for discharge. Dworshak Fish Hatchery cannot utilize the reuse system because of water quality issues. When the reuse system is utilized, water quality decreases and fish mortality increases.

Dworshak Fish Hatchery has 30 raceways arranged in 2 banks. The majority of effluent exits the hatchery via the fish ladder. Cleaning effluent can be diverted to a sump and then pumped to the settling basin and out to the North Fork Clearwater River. The hatchery has 128 small nursery tanks in the nursery room. Nursery tank effluent is always treated in one of two full-flow clarifying basins that are part of the System I Burrows Pond reuse system.

Dworshak Fish Hatchery currently discharges the majority of hatchery effluent directly to either the North Fork of the Clearwater River or the Clearwater River with minimal or no effluent treatment. There are a total of 20 discharge locations from the hatchery (7 outfalls to the North Fork and 13 outfalls to the main stem of the Clearwater), although many of them are storm drains or overflows that do not come into contact with fish rearing environments or do not discharge on a continuous basis. Nursery tank effluent is always treated in one of two full-flow clarifying basins. When not operated in reuse, effluent from ponds in Systems I and II is discharged directly to the Clearwater or North Fork Rivers. System I Burrows pond effluent is only treated in the system's clarifying basins during water reuse operation. Fish typically experience poor health during the time the reuse systems are being operated, particularly fish in Systems II and III. System III is no longer operated in reuse configuration due to the extensive decline in fish health during reuse operation.

Discharge permits in the state of Idaho are issued through the US Environmental Protection Agency (EPA). Dworshak Fish Hatchery currently operates under discharge Permit #IDG131003 within the National Pollutant Discharge Elimination System (NPDES), General Permit #IDG131000 for Cold Water Aquaculture Facilities in Idaho without wasteload allocations. In December 2008, the EPA issued a Notice of Violation under the Clean Water Act (CWA), 33 U.S.C. §1251 *et seq* to the FWS for violating their General Aquaculture NPDES permit. The two primary violations were the discharge of untreated cleaning wastewater and that the Dworshak Fish Hatchery lacked the means to measure flow.

If an aquaculture wastewater treatment facility in Idaho needs to be changed or modified, the director of the Idaho Department of Environmental Quality (DEQ) must approve the plan prior to construction or modification. The DEQ must also be notified when the project is complete so that a representative from the DEQ can conduct onsite inspection of the completed project to ensure compliance with the approved plans and specifications.

2. REFERENCES

- a. Clean Water Act, 33 U.S.C. § 1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4
- b. http://cfpub.epa.gov/npdes
- c. http://www.fws.gov/dworshak/
- d. http://www.epa.gov/waterscience/guide/aquaculture/ (provides new rule establishing effluent limitations guidelines (ELGs) for concentrated aquatic animal production (CAAP), or aquaculture, facilities.
- e. EM 385-1-1 (2008) Safety and Health Requirements Manual http://www.usace.army.mil/CESO/Pages/EM385-1-1,2008NEW!.aspx
- f. State of Idaho Department of Water Resources (IDWR) Minimum Acceptable Standards for Open Channel and Closed Conduit Measuring Devices
- g. ER 1110-2-1150

3. CODES TO BE USED FOR SYSTEM CONFIGURATION, ANAYSIS, AND TESTING

The most recent version of the following codes, and the codes and standards referenced in the body of these codes, shall be used by the AE while performing the work:

a. Idaho Code of Statutes, Title 39, Chapter 1 (39-118); http://www.legislature.idaho.gov/idstat/Title39/T39CH1SECT39-118.htm

b. 40 CFR Parts 451 (http://ecfr.gpoaccess.gov/cgi/t/text/text-text-dv?c=ecfr&rgn=div5&view=text&node=40:29.0.1.1.23&idno=40)

4. GOVERNMENT FURNISHED MATERIALS

- a. As-built drawings of the Dworshak Fish Hatchery.
- b. Copy of the "Engineering services for Water Treatment Feasibility Study and Conceptual Planning Documents" that was prepared by the Conservation Fund Freshwater Institute in March of 2008.
- c. NPDES permit IDG-131003
- d. Quality Assurance (QA) Plan
- e. Best Management Practices (BMP) Plan
- f. Discharge Monitoring Reports (DMRs) for the last 12 months and fish loading rates

5. TASK DESCRIPTION

The overall purpose of this task order is to bring Dworshak Fish Hatchery into compliance with their NPDES permit while operating the hatchery in all modes. A full evaluation of the existing wastewater equipment needs to be conducted to determine whether the existing equipment can be used as is, modified or completely bypassed. During all phases of the work the AE shall coordinate with DEQ and EPA to ensure the process, methods, operations, and plans developed under this Contract comply with the applicable State and Federal regulations governing the NPDES requirements.

The effort will take place in three phases. The first two phases will be performed under this Task Order. The third phase will be performed by separate Task Order. The three phases are:

Phase 1: Predesign Study

Phase 2: Feasibility Study

Phase 3: Final Plans & Specifications

All proposed modifications shall have written approval of the governing authority prior to beginning work.

PHASE 1 – PREDESIGN STUDY

Conduct a predesign study and provide a predesign study report explaining alternatives for bringing the Dworshak Fish Hatchery into compliance with its NPDES permit. The report shall be authored by a licensed professional engineer (PE) registered to practice in the State of Idaho. The report author shall stamp and sign the Predesign Study Report. Prior to the Predesign Study Report being provided, there will be a "brainstorming" session that the COE will participate in to discuss the alternatives.

Task 1.1 Study Existing Fishery Conditions and Information

The AE shall do the following:

Government Furnished Materials, Applicable Codes and References. The AE shall review and become fully familiar with the information provided by the Government and the applicable codes and references that apply.

Determination of Present Conditions and Configuration of the Existing System. The AE shall become familiar with the project site and system specifics. Field verify existing system operation, usage, equipment function, capacity and configuration.

Review the alternatives in the "Engineering services for Water Treatment Feasibility Study and Conceptual Planning Documents" that was prepared by the Conservation Fund Freshwater Institute. The AE shall be prepared to discuss the viability of the alternatives at the Brainstorming meeting.

Perform a preliminary hydraulic evaluation of the existing effluent. Take photos as necessary for use during the Brainstorming Meeting and for inclusion in the Predesign Study Report to show what system components are properly functioning and what components are not.

Contact DEQ and EPA to understand NPDES requirements, how the facility is in violation, and how to best proceed with communications to ensure the entire design process meets their requirements.

Prepare a summary report of site effluent facilities information. The summary report shall include a site plan, table of engineering information, and permit criteria. Table of engineering information to include information such as water flows (gpm), pond volumes, pump sizes, electrical service sizes (voltages and amps), and time of year scheduling. The permit criteria (NPDES) shall include volumes and rates of discharge and make up of pollutants. This facility summary report is to provide a short snap-shot of site as-built conditions and effluent discharge information related to the effluent discharge study

Task 1.2 Preliminary alternatives analysis and Brainstorming Meeting

The AE shall prepare alternatives to be discussed at the Brainstorming Meeting. The meeting will take place at the Walla Walla District Headquarters building. Pros and cons of each alternative shall be presented in terms of operation and maintenance, constructability, and rough construction costs. The purpose of the meeting is for the AE and the COE to collaboratively discuss each alternative proposed. The end result of the meeting is to determine the three alternatives for the Predesign Study Report. Anticipate the meeting to take **8 hours.** Take notes to document the process and results of the meeting.

Task 1.3 Prepare Draft Predesign Study Report

Develop three System Alternatives based on the outcome of the Brainstorming Meeting. Develop, propose and provide evaluation and executive summary of the three alternatives available for design of a waste water system that will be in full compliance with applicable local, State, and Federal regulations. Determine the rough-in dimensions of all proposed equipment and propose a location for each wastewater treatment system alternative. Interview project personnel to determine desired final system configuration, instrumentation type, routings and locations of all new and relocated equipment. Coordinate location and layout of any new equipment with the On Site Point of Contact. Consider all applicable design issues during design development, including but not limited to the following:

- a. meeting NPDES requirements
- b. minimizing cultural/environmental impacts
- c. minimizing interruptions to hatchery operations during construction
- d. ensuring each inlet and outfall has flow monitoring capability (investigate alternative(s) for inlet and effluent monitoring)
- e. minimizing operation and maintenance costs
- f. required record keeping
- g. reducing the number of outfalls
- h. alarm functions for flow monitoring
- i. availability of electrical power sources for treatment system equipment
- j. availability of waste water connections for treatment system equipment
- k. logistics and probabilities of any new below grade utility or piping routing
- 1. effluent pollutant sensor, instrumentation, and data acquisition monitoring. (i.e. temperature, turbidity, pH sensing and data acquisition equipment)
- m. Supervisory Control and Data Acquisition (SCADA)
- n. electrical one-line load summary and estimate
- o. maintaining required access to existing equipment and work areas
- p. methods of handling waste accumulation in the various treatment structures

Include drawings indicating the following:

- a. wastewater treatment system process configuration schematics, capacities, and flow rates
- b. existing piping and equipment to remain
- c. name plate performance of existing equipment
- d. existing piping and equipment to be removed
- e. exiting piping and equipment that will be bypassed but does not need to be removed
- f. pipe sizes
- g. instrumentation and control sequence
- h. type and location(s) of proposed equipment and monitors
- i. performance characteristics of proposed wastewater treatment equipment including electrical requirements and wastewater discharge requirements
- j. new piping and appurtenances
- k. locations of electrical power panels for the treatment equipment

Estimate the construction, operation, and maintenance costs for each treatment system alternative. For viable alternatives provided in the Freshwater Institute Feasibility Study, confirm and/or update as necessary the cost information.

<u>Predesign Study Report</u>. The predesign study report shall include all findings, recommendations and results determined by the predesign study. The predesign study report shall be submitted to the COE and include the following:

- a. Kick-off and Brainstorming meeting minutes
- b. Minutes of meetings held between the AE and DEQ or EPA as well as copies of any other correspondence (phone, fax, E-mail, etc.).
- c. Present Conditions and Configuration of the Existing System.
- d. Evaluation and Executive Summary of Wastewater Treatment System Alternatives. For each alternative, include a discussion of the pros and cons and the estimated construction, operation, and maintenance costs. Anticipated new water quality measurements shall also be address.
- e. Any calculations, analysis performed, equipment catalog cuts, list of codes used, design narrative and rational employed in the determination of the system recommendations.
- f. Actual documentation from DEQ that states the effluent limits expected to be met.
- g. The predesign study report shall include the AE's recommendation for the preferred alternative to achieve NPDES compliance.
- h. Drawings

Task 1.4 Review meeting to discuss COE comments

Participate in a review meeting at the Walla Walla District to review comments made on the Predesign Report. Comments will be entered into the Dr Checks system. Address comments and evaluate in Dr. Checks. Take meeting notes.

Task 1.5 Prepare Final Preliminary Report

Incorporate comments from Dr Checks and the review meeting and prepare the Final Preliminary Report. The COE will make a decision on the preferred alternative within two weeks from receipt of this report.

PHASE 1 SCHEDULE AND DELIVERABLE SUBMITTAL DATES

SCHEDULED MILESTONE AND DELIVERABLES	TIME
Kick-off meeting at Dworshak Fish Hatchery	NLT September 15, 2009
Brainstorming Meeting at Walla Walla District to discus	NLT October 8, 2009
alternatives. The best three alternatives will be determined.	
Submit Predesign Study Report	NLT November 13, 2009
 One digital copy in Microsoft Word 	
• 4 paper copies	
Review meeting to discuss COE comments.	NLT December 3, 2009
Meeting will be held at Walla Walla District and will last 2-3	
hours	
Submit Final Predesign Study Report	NLT January 18, 2010
One digital copy in Microsoft Word	,
8 paper copies (bound)	

Note: The time and date for the meetings will be coordinated with the AE to ensure all key personnel can participate.

PHASE 2 - FEASIBILITY STUDY

Task 2.1 Feasibility Design

Prepare preliminary plans and outline specifications to a feasibility level for the preferred alternative determined from Phase 1. The design shall consider system downtime during the construction phase as required to maintain hatchery function. Plans and outline specifications should be prepared in accordance with the guidance provided in section 6 below.

For the Feasibility Design drawings; include the following:

- a. system schematics
- b. hydraulic and energy grade lines
- c. equipment capacities
- d. system control sequences
- e. locations of equipment
- f. all anticipated plan views
- g. partial plans
- h. building sections
- i. elevations
- j. legends and abbreviation lists
- k. system control block diagrams
- 1. detailed drawings of congested areas confirming ability to route new systems per design

Indicate coordination between engineering disciplines.

Task 2.2 Independent Technical Review (ITR)

Perform an ITR. An ITR is a review by a qualified person or team

not involved in the day-to-day production of a project/product, for the purpose of confirming the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. ITR is a holistic, comprehensive review of the project. While ITR is a critical component of quality control, it will not replace checks or other quality control processes. The ITR team must assure independence from the PDT by not becoming involved in the routine day-to-day production decisions, including formulation, evaluation, analyses, design, or value engineering studies. Each ITR team member should review each product for consistency across the various disciplines of the project. ITR team members must also review his/her discipline's elements and how they impact and align with the

project's functions. Comments will be limited to those that are required to ensure adequacy of the product; it will not be the reviewer's prerogative to dictate matters based solely on personal preferences. **Comments will be entered into the Dr Checks system.**

The primary objectives of ITR are to ensure that:

- a. The project meets the customer's scope, intent and quality objectives as defined in the PMP.
- b. Formulation and evaluation of alternatives are consistent with applicable regulations and guidance.
- c. Concepts and project costs are valid.
- d. The recommended alternative is feasible and will be safe, functional, constructible, environmentally sustainable, within the Federal interest, and economically justified according to policy.
- e. All relevant engineering and scientific disciplines have been effectively integrated.
- f. The source, amount, and level of detail of the data used in the analysis are appropriate for the complexity of the project.
- g. Content is sufficiently complete for the current phase of the project and provides an adequate basis for future development effort.
- h. Project documentation is appropriate and adequate for the project phase.

Task 2.3 Engineers Cost Estimate

Prepare quantity computations, and construction cost estimates.

Task 2.4 Design Documentation Report (DDR)

Provide a complete DDR including, but not limited to, general project parameters, design objectives, functional and technical requirements, design calculations, equipment catalog cuts, copies of all correspondence and test reports, list of codes and standards used, and design rationale used. The content and format of this report shall conform to the requirements contained in Appendix D of ER 1110-2-1150. The ITR comments and certification statements, documentation of QC reviews and comments, and minutes of meetings will be incorporated into the DDR as separate appendices. The DDR shall also contain copies of site visit reports and all records of discussions.

Task 2.5 Review meeting to discuss COE comments

Participate in a review meeting at the Walla Walla District to review comments made on the Feasibility Study. Comments will be entered into the Dr Checks system. Address comments and evaluate in Dr. Checks. Take meeting notes

Task 2.6 Prepare Final Feasibility Study Report

Incorporate comments from Dr Checks and the review meeting and prepare the Final Feasibility Study.

PHASE 2 SCHEDULE AND DELIVERABLE SUBMITTAL DATES

SCHEDULED MILESTONES AND DELVIERABLES	TIME
 Submit Feasibility Study Drawings 3 hardcopy sets, 1 digital Outline Specifications 3 hardcopy copies, 1 digital Engineers Cost Estimate 1 hardcopy, 1 digital DDR 3 hardcopy sets 1 digital 	NLT March 1, 2010
COE Review (comments will be made in Dr Checks)	Completed NLT March 19, 2010
Review Conference (to be held in Walla Walla)	Completed NLT April 2, 2010
 Submit Final Feasibility Study Drawings 3 hardcopy sets, 1 digital Outline Specifications 3 hardcopy sets, 1 digital Engineers Cost Estimate 1 hardcopy, 1 digital DDR 3 hardcopy sets, 1 digital 	NLT April 26, 2010

6. DOCUMENT PREPARATION AND STANDARDS

Drawings

Prepare drawings in a manner that adequately delineates the work and clearly defines the proposed modifications to the hatchery that bring it back into compliance with the requirements of the NPDES permit. The drawing set shall be sufficiently detailed to permit a seamless transition into the development of complete design plans and specifications in the next phase of work.

Full scale drawing sheets shall be developed as ANSI "D" sized sheets (22"x34" at the trim line) and shall utilize the standard Walla Walla District COE title block. Half scale drawing sheets shall be provided as ANSI "B" sized sheets (11"x17" at the trim line). Full scale drawing sheets shall be of adequate size, and be clear and sharp so that half scale prints of these sheets are legible and easy to read. All drawing sheets shall be stamped and signed by the engineer that produced or directly supervised their production.

All drawings shall be drawn using Computer Aided Drafting and Design (CADD) software, and submitted in MicroStation (Bentley Microsystems) version 8 or later design file format. Drawing file numbering system shall be as described by the A/E/C CADD Standard. One CADD (*.DGN) file shall be used per drawing sheet. Coordinate compatibility between the AE's work and the COE, with the District's CADD Manager prior to initiating any preparation of drawings. All drawings shall be formatted to the A/E/C CADD Standard and The National CAD Standard.

The electronic files may be submitted on a Compact Disk (CD) using the ISO 9660 logical file format. Coordinate submissions with the District CADD Manager for the appropriate data transfer medium. Label transfer medium with a complete description of contents.

Outline Specifications

Outline Specifications shall be a list of applicable Unified Facilities Guide Specifications (UFGS) sections and the A-E prepared sections that will be used in the contract documents. The section number with the corresponding section title shall be given for each specification section listed in the Outline Specification. Arrange specification divisions, and sections within their respective divisions, in numerical order. Number AE developed specifications to fall in their respective division at a logical location.

7. AE SAFETY PRECAUTIONS AND PROJECT SITE INVESTIGATION

Accident prevention and safety requirements are the responsibility of the AE while visiting or working at all COE project sites. Compliance with requirements for accident prevention and safety by AE subcontractors is the responsibility of the AE. Provide and maintain work environments and procedures that will safeguard the public, Government personnel, contractor personnel, subcontractor personnel associated with other contractors, property, materials, supplies, and equipment exposed to contractor operations and activities.

Project Site Investigations

Observe and evaluate existing project site conditions during all phases of providing engineering services. Gather site data necessary for performing the design.

Notify the On-Site Point of Contact and the Technical Point of Contact a minimum of five business days in advance of each Project Site Investigation. Specifically, for each Project Site Investigation:

- Contact the Technical Point of Contact or Contracting Officers Representative and discuss the type of work
 to be performed, safety issues such as hazards, proper attire, and protective equipment potentially
 necessary. These discussions shall not relieve or waive any accident for hazard precautions, but shall serve
 as general information for the contractor and for the COE to be aware of the work or activity being
 performed.
- 2. Contact the On-Site Point of Contact or the designated alternate point of contact. Describe the work intended to be performed, the schedule, and identify any further safety measures necessary for the specific

work or activity to be performed. When arriving at a project site, meet with the On Site Point of Contact or designated alternate, and walk the work area, discuss the activities to be performed and discuss the agreed safety precautions.

8. AUTHORIZED CHANGES

Changes in scope, time, or deliverables can only be authorized by the Contracting Officer (KO). The AE shall notify the KO immediately if they have received direction to perform work outside the scope of the contract. Changes in scope will be negotiated and a written modification issued, before proceeding with the work.

9. CONTRACTOR PROPOSAL

The Contractor's proposal shall:

- a. Formally acknowledge understanding of the Task Order requirements and that the proposal is intended to fully execute those requirements.
 - b. Present the proposed costs in a fashion that clearly indicates, in detail:
 - all proposed labor professions, labor hours, labor rates,
 - other direct costs such as miscellaneous costs, travel costs,
 - subcontractor costs
 - overheads and/or G&A
 - profit
 - c. The AE shall prepare the proposal, then submit an electronic copy of the proposal form with the hours and expenses zeroed, to allow the Government to prepare an estimate in the same format. The intent is to clearly identify activities, and to provide a format that allows accurate comparison of hours and expenses.

10. PAYMENT

Payment will be made in accordance with Federal Acquisition Regulation clause 52.232-10, Payments under Fixed-Priced Architect-Engineer Contracts (Aug 1987) and 52.232-26, Prompt Payment for Architect-Engineer Contracts (Oct 2003). Invoices for progress payments will identify progress for project milestones and show total contracted, previously completed, currently completed, and remaining balance. Invoices will be submitted as follows:

The original to:

USAED, National Finance Center 5722 Integrity Drive Millington, TN 38054-5005

One hardcopy and one via email to:

Mark Jones U.S. Army Corps of Engineers Walla Walla District 201 North Third Avenue Walla Walla, WA 99362-1876 Email: mark.t.jones@usace.army.mil

11. POINTS OF CONTACT

All documents shall be submitted to the following:

U.S. Army Corps of Engineers Walla Walla District (Attn: Mark Jones, CENWW-EC-D-GE) 201 N. 3rd Ave.
Walla Walla, WA 99362

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Mr. Tim Dykstra Fisheries Biologist

Telephone: 509-527-7125

Email: timothy.a.dykstra@usace.army.mil:

Mr. Damian Walter

Environmental Compliance Specialist

Telephone: 509-527-7121

Email: damian.j.walter@usace.army.mil

Mr. Mark Smith Project Manager

Telephone: 509-527-7275

Email: mark.r.smith@usace.army.mil

Mr. Mark Jones

Contracting Officer Representative (COR) and POC for Dr Checks and SPECSINTACT

Telephone: 509-527-7219

Email: mark.t.jones@usace.army.mil

On-Site Point of Contact

Mr. Larry Peltz Complex Manager

Dworshak National Fish Hatchery P.O. Box 18, 4147 Ahsahka Road

Ahsahka, ID 83520-0018 Telephone: 208-476-2227 Email: larry peltz@fws.gov

Website: http://www.fws.gov/dworshak

U.S. Environmental Protection Agency

Mr. Chris Gephardt NPDES Permits Unit Region 10, OWW-130 1200 Sixth Avenue, Suite 900 Seattle, WA 98101 1118 Telephone: 206-553-0253

Idaho Department of Environmental Quality (DEQ)

Thomas J. Moore, P.E. Regional Manager – Water Quality Lewiston Regional Office 1118 F St.

Lewiston, ID 83501 Telephone: 208-799-4370

Email: Thomas.Moore@deq.idaho.gov